

Application No.: 10/718,466

Docket No.: JCLA11486

REMARKSPresent Status of the Application

The Office Action mailed March 2<sup>nd</sup>, 2005 rejected all presently-pending claims 1-4, 6-9, and 11-20. Specifically, the Office Action rejected claims 1, 2, 6, 8 and 11-16 under 35 U.S.C. 102(b), as being anticipated by Tolles et al. (U.S. 6,220,942). The Office Action also rejected claims 18-20 under 35 U.S.C. 102(b) as being anticipated by Tolles et al. (U.S. 6,217,426). The Office Action rejected claims 3-4, 7, 9 and 17 under 35 U.S.C. 103(a), as being unpatentable over Tolles et al. (U.S. 6,220,942) in view of Wang (U.S. 6,666,751) and Tolles et al. (U.S. 6,217,426). Applicants respectfully traverse these rejections and submit that claims 1-4, 6-9, and 11-20 have been already distinguishable over the cited references. Hence, the reconsideration of those claims is respectfully requested.

Discussion of Office Action Rejections

*The Office Action rejected claims 1, 2, 6, 8 and 11-16 under 35 U.S.C. 102(b), as being anticipated by Tolles et al. (U.S. 6,220,942). The Office Action also rejected claims 18-20 under 35 U.S.C. 102(b) as being anticipated by Tolles et al. (U.S. 6,217,426).*

It is well established that anticipation under 35 U.S.C. 102 requires each and every elements of the rejected claims must be disclosed exactly by a single prior art reference.

The claims 1, 6, 11, 14 and 18 are allowable for at least the reason that Tolles et al. in both citations, U.S. 6,217,426 and U.S. 6,220,942, fail to teach or disclose each and every

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features of the proposed independent claim 1, 6, 11, 14 and 18. More specifically, the polishing pad 103 disclosed by Tolles et al. in both citations and deemed as the fixed abrasive polishing pad of the present invention by the Examiner is not the fixed abrasive polishing pad. There is no evidence found in the specification of the cited arts, U.S. 6,217,426 and U.S. 6,220,942, to support that the polishing pad 103 is a fixed abrasive polishing pad used in the slurry-free polishing process. Although the polishing pad 103 shown in Fig. 7 of the cited reference, U.S. 6,220,942, possesses spot patterns, it is not reasonable to allege that the polishing pad 103 is the fixed abrasive polishing pad with the spot patterns as the abrasive particles within the polishing pad 103.

On the other hand, Tolles et al. in both cited arts, U.S. 6,217,426 and U.S. 6,220,942, emphasize that the CMP system equipped with the polishing pad 103 further includes a chemical supply system 54 (as shown in Fig. 3 on U.S. 6,217,426 and Fig. 3 on U.S. 6,220,942) for introducing a chemical slurry (col. 4, lines 60-62 on U.S. 6,217,426 and col. 6, lines 30-32 on U.S. 6,220,942). It is obvious that the polishing pad 103 is used in a CMP process with a slurry comprising the consisting of colloidal silica suspended in a KOH solution (quoted from pages 434, ULSI TECHNOLOGY, C.Y. CHANG and S.M. SZE, International Editions 1996). The attachment labeled as Exhibit A are pages 434-437 of ULSI TECHNOLOGY, C.Y. CHANG and S.M. SZE, International Editions 1996. Applicants would like to attract the Examiner's attention to the Exhibit A. It shows that the CMP polishing process with using slurry is relying on chemical/mechanical action between the slurry and the wafer (as shown in Fig. 40 on page 436) rather than mechanical abrasion (shown in 17-18 on page 435).

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However, in the present invention, the fixed abrasive polishing pad is used in a slurry-free polishing process. The fixed abrasive polishing pad is **made of binder wrapping a lot of polishing particles**. In the slurry-free CMP process, the binder for wrapping a plurality of polishing particles is consumed to expose the polishing particles to polish the surface of the wafer. Another attachment labeled as Exhibit B is a paper published at CMP-MIC Conference, Santa Clara, California on March 2002. In Exhibit B, as marked, the author clearly mentions that "Small composites (i.e., 200  $\mu$  m wide and 40  $\mu$  m high) of abrasive ( $\text{CeO}_2$ ) and resin binder are positioned on a polyester backing. The composites are precisely shaped and provide a third dimension of abrasive, as well as considerable space for chemical and by-product transport. **Rather than continuously having to supply fresh abrasive to the pad via slurry, and pad conditioning, the Fixed Abrasive matrix contains all the necessary abrasive. No conditioning is required**". It is clear that the fundamental polishing mechanism of the slurry-free CMP is totally different from that of the CMP with using slurry. People skilled in the art would not modify Tolles' application by replacing the polishing pad 103 with a fixed abrasive pad to perform a CMP process with using slurry.

Therefore, Tolles et al. substantially fail to teach each and every features of claims 1, 6, 11, 14 and 18 and therefore, Tolles et al. cannot possibly anticipate the claimed invention as claimed in the proposed independent claims 1, 6, 11, 14 and 18 in this regard.

*The Office Action further rejected claims 3-5, 7, 9-10, 17 and 21 under 35 U.S.C. 103(a), as being unpatentable over Tolles et al. (U.S. 6,220,942) in view of Wang (U.S. 6,666,751).*

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Since claims 3-5, 7, 9-10, 17 and 21 are dependent claims which further define the invention recited in claims 1, 6, 11, 14 and 18 respectively, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 102. Thus, reconsideration and withdrawal of this rejection are respectively requested

For at least the foregoing reasons, Applicant respectfully submits that independent claims 1, 6, 11, 14 and 18 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 3-5, 7, 9-10, 17 and 21 patently define over the prior art as well.

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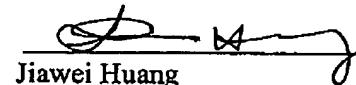
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-4, 6-9 and 11-20 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,  
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